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US Army Edgewood Arsenal
Chemical Research and Development Laboratories
Technical Report

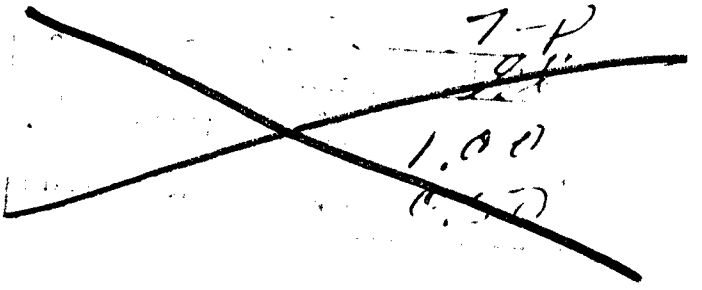
CRDLR 3291

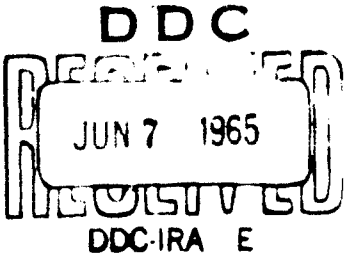
A Glass Distributor for Large Chromatographic Columns

by

Norwood K. Schaffer
A. R. Mitchell
F. de Cesare

June 1965





EDGEWOOD ARSENAL, MARYLAND 21010

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A GLASS DISTRIBUTOR FOR LARGE CHROMATOGRAPHIC COLUMNS

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Physiology and Chemical Research Divisions
Directorate of Medical Research

June 1965

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FOREWORD

The work described in this report was authorized under Task 1A013001A03902, In-House Laboratory Initiated Research, Chemical (U). This work was started in April 1963 and completed in March 1964. The experimental data are contained in notebook MN-1492.

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Disposition

When this report has served its purpose, DESTROY it.

DIGEST

A glass distributor incorporating a sintered-glass disc permits the rapid addition of a large volume of sample to the surface of an adsorbent in a chromatographic column of wide diameter.

A GLASS DISTRIBUTOR FOR LARGE CHROMATOGRAPHIC COLUMNS

I. INTRODUCTION.

A distributor is a device placed on the surface of the adsorbent in a wide-diameter chromatographic column, permitting the rapid addition with uniform penetration of a large volume of sample. Without a distributor, pitting of the adsorbent surface occurs with consequent irregular penetration of the sample, particularly with such soft adsorbents as Sephadex. Flodin* has described a distributor used on columns 10 to 20 cm in diameter for semi-continuous gel filtration. The distributor described herein is much simpler and can be made by a glassblower. It has been used successfully in the chromatography of tryptic digests on Sephadex G-50 columns 9 cm in diameter.**

II. EXPERIMENTATION.

The device is shown in the figure and consists of a glass tube, A, 13 mm in outside diameter and 6.5 cm in length, flared at the top, and inserted through a hole in the center of a sintered-glass disc, B, of slightly less diameter than the inside of the column. The tube is bulged and sealed off at D. It is held to the disc by extension through the center hole and flanged at E. Four holes 5 mm in diameter are spaced evenly around the tube at the level of the seal. Three stabilizing side arms of small glass rod or 4-mm tubing closed at the end, C, are sealed to the tube near the top. A circle of filter paper is placed on the surface of the Sephadex to prevent the disc from partially submerging. The solution to be chromatographed is poured through the tube and comes out through the holes above the disc. This assures a minimum disturbance of the adsorbent surface.

III. CONCLUSIONS.

A glass distributor incorporating a sintered-glass disc permits the rapid addition of a large volume of sample to the surface of an adsorbent in a chromatographic column of wide diameter.

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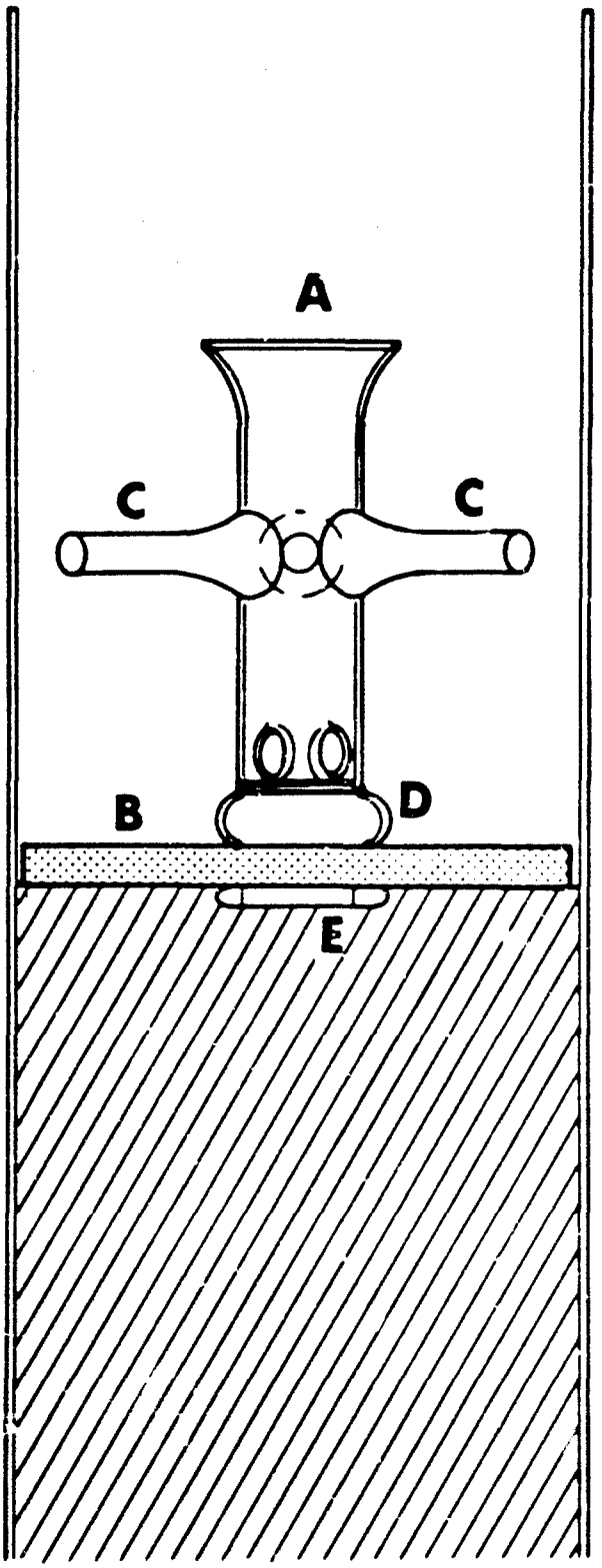
* Flodin, P. Dextran Gels and Their Applications in Gel Filtration. Dissertation, published by Pharmacia, Uppsala, Sweden (1962).

** Schaffer, N. K., Mitchell, A. R., Nordgren, R. A., and Orndorff, B. H. CRDLR 3282. An Active-Center Decapeptide From Chymotrypsin Utilizing Cyanogen Bromide Cleavage. (In publication.) UNCLASSIFIED Report.



FIGURE

DISTRIBUTOR FOR LARGE CHROMATOGRAPHIC COLUMNS

(A - Glass tube inserted through sintered-glass disc, B, C - Three stabilizing glass-rod side arms; D, E - Flanges on tube to hold it to disc)